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BACTERIUM FOUND TO DISSECT VIRUS

Minute Granules and Rings Result From Break-Up by Biological Means

STRAIN FOUND IN CREEK

Berkeley Discovery Is Seen Leading to Advances in Study of Structure

A California scientist has reported the discovery of a strange new golden bacterium that can dismantle one of the toughest known viruses into minute granules, "rodlets" and rings.

The discovery brings a powerful new tool to the study of the structure and function of viruses, according to Dr. Benjamin E. Volcani, who did the work at the University of California's Virus Laboratory in Berkeley.

Dr. Volcani found the bacterium in the mud of Strawberry Creek, which meanders through the Berkeley campus of the university. He found and cultured eight strains of bacteria before he found the bright yellow one that worked.

Used Other Means

Heretofore, scientists have used physical or chemical means rather than biological means to study virus structure, Dr. Volcani explained in a telephone interview.

They shook the viruses to pieces, broke them down with heat, shattered them with sound waves, and tore them apart with acids and detergents. Such techniques, Dr. Volcani said, were too drastic to give more than only limited information.

"If you wanted to find out about the size and shape of the bricks in a column," he said, "you wouldn't puverize it. You would take it apart with a chisel."

This essentially, is what the golden bacterium does with the long, slender tobacco mosaic virus (TMV) particles—very gently and with extraordinary precision.

The bacterium performs its chemical surgery on the virus with enzymes, biological agents that digest proteins in the virus' "skin."

Fragile Areas Attacked

Dr. Volcani has found that the TMV has four or five fragile areas in its protein skin where breaks most frequently occur, resulting in little rods or rodlets. Other actions by the bacteria break the virus into doughnut - shaped fragments. Sometimes, granules and fragments or irregular size and shape result.

The existence of such discrete virus sub-units was strongly suggested in earlier findings by scientists at California and elsewhere.

Dr. Volcani's new work now seems to pin this down with greater certainty. His findings will be published in the Proceedings of the International Congress of Biochemistry.

"The next step is to see if the virus can be put back together from the pieces," he said.

Reconstitution of TMV has been done chemically. If Dr. Volcani can do it with viruses dismantled by bacteria, however, it will be the first "natural" reconstitution of materials that exist on the borderline of life.